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THE PATEL LAW FIRM, P.C.
2532 DUPONT DRIVE
IRVINE, CA 92612

EXAMINER	
FLANDERS, ANDREW C	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,012	WOOLFORK, C. EARL	
	Examiner	Art Unit	
	Andrew C. Flanders	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,6,7 and 10-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,6,7 and 10-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Affidavit

The Declaration regarding the limited battery life under 37 CFR 1.132 filed 15 August 2006 is insufficient to overcome the rejection of the claims based upon the combination of Alstatt in view of Schotz as set forth in the last Office action.

As an initial matter, the data sheets in Exhibit A are generally unreadable as is all of Exhibit D. However, assuming that everything in Exhibit C that is taken from Exhibit's A and D are correct, the affidavit is still not persuasive.

The affidavit alleges that the combination of Alstatt in view of Schotz is non operative due to limited battery life. The affidavit is not persuasive for three reasons.

First, as stated in previous actions, one cannot accurately determine the time of operation because the power requirements are unknown. Applicant has done a sufficient job to show that the power requirements of Schotz are significantly greater than the power requirements of Alstatt in exhibits A, B and C. It is accepted by the examiner that the power requirements of Schotz are much greater than that of Alstatt. However, the affidavit fails to explicitly state or address where Alstatt discloses a 50 mA-h battery. The only section of Alstatt the affidavit refers to is col. 8 lines 22 – 24 which disclose that the battery has a voltage of 1.5V or 3.0V. Nothing is mentioned anywhere either in Alstatt or the affidavit where this battery of 50 mA-h is obtained. Thus the calculations cannot be considered persuasive.

Secondly, the calculations provided in Exhibit C prove that that combination is in fact operative. While the combination may be subject to limited battery life in the affidavit's calculations, it will still operate. The calculation's in Exhibit C show operation times of 6, 8, 11 and 15 minutes. Thus the combination cannot possibly be non-operative.

Lastly, it should be noted that it is unlikely that a 50 mA-h batter is used in the Alstatt device. Batteries for portable devices at the time of the Alstatt invention are known to have much greater chargers, as much as 1116 mA-h per gram (see Goldner U.S. 6,982,132). Examiner submits that it is more likely that the Alstatt device uses one of these larger batteries than the 50 mA-h battery stated by the affidavit. Even if this was not the case, it would be notoriously well known and obvious to use this larger battery, thus defeating the limited battery life allegation.

The Declaration regarding FSK being an inherent feature of FHSS and FHSS, and DSSS are inherent features of CDMA under 37 CFR 1.132 filed 15 August 2006 is insufficient to overcome the new matter rejections

The affidavit alleges that FSK is an inherent feature of FHSS and FHSS and DSSS is an inherent feature of CDMA. Inherency is defined in the MPEP § 2112 IV as follows:

> The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing

> described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)

It is submitted that FHSS and DSSS **may** occur or be present in CDMA and thus not inherent. The CDMA overview provided by www.telecomspace.com discloses three ways to spread the bandwidth of a signal in CDMA, Frequency hopping, Time hopping and Direct Sequence. As such, FHSS and DSSS may be present but aren't necessarily required, thus they cannot be inherent. Neither of the three methods disclosed for spreading were present in either the parent specification or the instant application's specification. The addition of them will result in a new matter situation as they are not inherent.

Additionally, because they are not inherent, the inherency of FSK is moot. The affidavit alleges that FSK is inherent in FHSS and since it is shown that FHSS is not inherent in CDMA, FSK cannot be added to the instant application without creating a new matter situation.

Response to Arguments

Applicant's arguments filed 18 August 2006 have been fully considered but they are not persuasive.

Applicant alleges:

> The rejections of Claims 1, 4; 6 and 10 under 35 U.S.C. §112, first paragraph, are respectfully traversed. Paragraphs [0014] and [0016] of the parent application disclose the features related to the generation of a unique codeword for an individual user. Pattern is defined as "an orderly sequence consisting of a number of repeated or Complimentary elements.... " (New Lexicon Webster's Encyclopedic Dictionary of the English Language, Deluxe Edition 1991). The specification discloses how a unique codeword is generated that spreads the• signal spectrum. Spreading or frequency hopping is used to control the sequence (i.e. pattern) of carrier frequency. Based on the above, a person skilled in the art at the time the invention was made would clearly conclude that the generation of a unique codeword for each individual user is the same as generation of a unique hop pattern for each individual user when applying frequency hopping spread spectrum. For the reasons set forth above, applicant-submits that claims 1, 4, 6 and 10 comply with the requirements set forth in 35 U.S.C. §112, first paragraph, and therefore, respectfully requests that the 35 USC. §112 rejections in regard to these claims be withdrawn.

Examiner disagrees. The specification is directed to a unique codeword for each individual user (paras. 0014 and 0016) as stated by Applicant. The unique codeword is never disclosed as a unique hop pattern nor is a unique hop pattern even disclosed. Applicant states : "Spreading or frequency hopping is used to control the sequence (i.e. pattern) of carrier frequency". Frequency hopping is not inherent in spreading. Thus while the codeword does spread the signal spectrum, the details of how it is done are never given in the specification. Spreading is done one of three ways in CDMA as shown above; none of the three ways are disclosed by Applicant. The addition of any of these, such as frequency hopping, is new matter.

Specification

The amendment filed 17 March 2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

1. "A frequency shift keying (FSK) modulation/detection technique could be used given a frequency hopping spread spectrum (FHSS) system choice."

The terms and techniques disclosed in this sentence (FSK and FHSS) were not present in the parent disclosure nor in the current application's disclosure and thus are new matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4, 6, 10, 12 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitation of "a unique hop pattern for each individual user" is not supported in the

disclosure of neither the present application nor the parent application. The relied upon disclosures teach generating a unique user code with one user but do not disclose any details on creating a unique "hop pattern" for each individual user.

Claims 19 – 32, 43 – 53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 19 – 32, 43 – 53 contain limitations directed to DSSS which is not in the original specification nor inherent as alleged by applicant.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 14 and 15 recite the limitation "said processed CDMA signal." There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 33 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Lindemann (U.S. Patent Application 2004/0223622).

Regarding **Claim 33**, Lindemann discloses:

A wireless digital audio system (Fig. 15B and Fig 17), comprising:

at least one audio source (Fig. 15B, 133, 134, 135);

at least one digital audio transmitter operatively coupled to said at least one audio source (Fig. 15B 131);

at least one audio receiver adapted for digital wireless communication with said at least one audio transmitter (Fig. 15B, 130 and Fig. 17 300)

each of said at least one digital audio transmitter and receiver being configured for code division multiple access (CDMA) communication (para 0075); and

at least one module adapted to audibly reproduce said processed CDMA signal, said CDMA communication configuration providing a user with independent audio reproduction free of interference from other users or wireless devices (Fig. 15A).

Regarding **Claim 34**, in addition to the elements stated in the rejection of claim 33, Lindemann further discloses:

At least one module adapted to amplify said processed CDMA signals (Fig. 17 element 301).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 6, 7, 10 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alstatt (U.S. Patent 5,771,441) in view of Schotz (U.S. Patent 5,946,343) and in further view of Schotz (U.S. Patent 5,491,839) and in further view of Rozin (U.S. Patent 6,342,844)

Regarding **Claim 1**,

Alstatt teaches an audio dongle for an utilizes a RF connection to interface portable audio device a pair of wireless headphones.

Specifically regarding Claim Alstatt teaches:

A wireless audio music system (Figure 1) for communication of an audio music signal (from 10) from the analog headphone jack (12) connected to a battery powered transmitter (14) and received by a battery powered headphone receiver (col. 4 lines 29-53; battery transmitter 43 col. 6, line 54; battery for headphone receiver is implicit the wireless nature of the headphones and context Alstatt) comprising:

an analog headphone jack (12) from an audio music source (10) in communication with a batter powered digital transmitter (14) (col. 4 lines 29 – 39)

The headphone system of Altstatt includes an antenna (24), receiver (22) and earphones 26 and 28.

However, the system of Altstatt an analog transmission system that, operation, lacks the benefits digitally encoded and transmitted audio signal.

With regard to the limitations of Claim 1, Altstatt does not clearly teach or suggest:

A wireless digital audio music system for spread spectrum communication

said battery powered digital transmitter converts an analog audio music signal from said existing analog headphone jack to a digital signal using an ADC in communication with an encoder

said encoder in communication with a channel encoder

said digital modulator in communication with a spread spectrum communication modulator that utilizes a code generator to create a unique hop pattern for each individual user;

said spread spectrum communication modulator in communication modulator in communication with a transmit antenna that transmits a radio frequency of approximately 2.4 GHZ for receipt by a receiving antenna;

said receiving antenna in communication with a spread spectrum communication demodulator

said spread spectrum communication demodulator in communication with a receiver code generator and with a digital demodulator;

said digital demodulator in communication with a wide bandpass filter

said wide bandpass filter in communication with a channel decoder;

said channel decoder in communication with a receiver decoder;

said DAC in communication with a filter to pass the analog music signal in the approximate frequency band of 20Hz to 20 kHz; and

said filter passing analog music signal will be amplified for processing to a speaker headphone set to provide high quality music for listening by a signal user wearing the headphones.

Schotz et al discloses a wireless digital audio transmission system.

Specifically regarding Claim 1, Schotz et al, when considered in view of the teachings of Altstatt applied above, teaches or at least suggests:

A wireless digital audio music system for spread spectrum communication (Figure 1 of Schott et al in view of Figure 1 of Altstatt, col. 6, lines 6-54; col. 14, lines 5-12)

said digital transmitter (22 of Schotz et al in view of 14 of Altstatt) converts an analog audio music signal from said existing analog headphone jack (analog input 30A,30B of Schott et al in view of analog connection 12,18 of Altstatt) to a digital signal using an ADC (52) in communication with an encoder (300) (col. 7, lines 6-15; col. 14, lines 43-58, as noted above `in communication' has been interpreted herein to mean passing a signal between the two components, regardless of other components that may be disposed between two said components)

said encoder (300) in communication with a channel encoder (98) (col. 9, lines 1-48; col. 14, lines 61-65)

said digital modulator (102) in communication with a spread spectrum communication modulator (104) that utilizes a code generator (106,308) (102 modulates input signal to produce I,Q signals, col. 10, lines 17-24; spread spectrum, col. 14, lines 5-12, col. 15, lines 40-52; code generator and user code corresponds to either house select code or PN code, col. 10, lines 43-47 or col. 15, lines 40-52; either can be considered to generate `user codes' in context of Schotz et al and particularly Altstatt in that the use of a transmitter corresponds to a particular user operating said transmitter);

said spread spectrum communication modulator (104) in communication (via 108) with a transmit antenna (38) that transmits at a radio frequency of approximately 2.4 GHz for receipt by a receiving antenna (40) (col. 6, lines 39-42; col. 10, lines 31-37)

said receiving antenna (40) in communication with a spread spectrum communication demodulator (comprising 144,146,148; col. 11, line 13 - col. 12, line 24; col. 15, lines 45-52)

said spread spectrum communication demodulator (144,146,148) in communication with a receiver code generator (408 or house code generator, col. 11, lines 13-56; col. 15, lines 45-52) and with a digital demodulator (202)(202 reverses phase shift modulation and combines signals, col. 12, lines 41-47);

said digital demodulator (202) in communication with a wide bandpass filter (such as 138 or 142 or 178, via components of 140,146) (col. 11, lines 14-24, col. 12, lines 1-11, noting that audio signals require wideband transmission col. 2, lines 58-60, which infers such a wideband nature on these filters);

said wide bandpass filter (such as 138 or 142 or 178) in communication (via components of 140,146) with a channel decoder (198) (col. 12, lines 1-28);

said channel decoder (198) in communication with a receiver decoder (400)(col. 15, lines 10-18);

said receiver decoder (400)in communication with a DAC (216) (col. 15, lines 10-26);

said DAC (216) in communication with a filter (218A,2185) to pass the analog music signal in the approximate frequency band of 20Hz to 20 kHz (signal is music, col. 2, lines 55-58; filtering col. 13, lines 57-67)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to modify the wireless audio system of Altstatt to incorporate the

digital transmission and reception scheme of Schotz et al for the wireless communication of full range audio data. The motivation behind such a modification would have been that such a digital transmission would have provided a number of benefits, including the reception of CD-quality sound and forwarding error correction, the latter of which would have enabled the system to account for errors in transmission. The digital-based system of Schotz et al would have also enabled the option of muting the output signal in the presence of sufficient levels of error. The spread spectrum technique of Schotz et al would have also limited interference from another signal to cause error in only one portion of the transmitted signal rather than the entire signal. Further, the transmission components of Schotz et al would have also permitted transmission over unlicensed frequency bands.

while the system of Altstatt in view of Schotz et al discloses a variety of filtering and other signal modifications, Altstatt in view of Schotz et al is not considered to clearly teach or suggest:

said channel encoder in communication with a digital low pass filter

said digital low pass filter in communication with a digital modulator

said DAC in communication with a filter that is a low pass filter

said filter passing analog music signal will be amplified for processing to a speaker headphone set to provide high quality music for listening by a single user wearing the headphones

However, Schotz et al incorporates another digital wireless system by reference, issued to Schotz.

Specifically regarding the limitations of Claim 1, Schotz, in view of the teachings of Altstatt and Schotz et al as applied above, teaches or at least suggests:

said channel encoder (300 of Schotz et al) in communication with a digital low pass filter (60 of Schotz)(col. 6, lines 41-53 of Schotz for lowpass filtering buffer 60, in view of modification listed below)

said digital low pass filter (60) in communication with a digital modulator (102 of Schotz et al)(col. 6, lines 41-53 of Schotz for lowpass filtering buffer 60, in view of modification listed below)

said DAC (216 of Schotz at al, which provides output signal) in communication with a filter that is a low pass filter (152 of Schotz in view of 218A, B of Schotz et al)

said filter (152) passing analog music signal will be amplified (by 156) for processing to a speaker headphone set (Figure 1 of Schotz, in view of headphones of Altstatt) to provide high quality music for listening by a single user wearing the headphones (col. 4, lines 2-5; col. 10, lines 19-22, noting that signal expansion is one form of amplitude control; it is further noted that otherwise output amplifying an audio signal for application to speakers is substantially well-known in the art).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate the low-pass filtering buffer of Schotz as part of the circuitry processing the output signal of the ADC (that is, as part of the signal path following the ADC) in the transmitter of Altstatt in view of Schatz et al. The motivation behind such a modification would have been that such a filtering buffer would have removed high frequency harmonics resulting from the multiplexing of the signal in the

ADC. To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate low pass filtering as taught by Schotz for the output filters of Altstatt in view of Schotz et al. The motivation behind such a modification would have been that such low pass filtering would have enabled the removal of any pilot or multiplexing byproducts yet present in the output signal. To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate the compression and expansion circuitry of Schotz as part of the input and output handling circuitry of the system of Altstatt in view of Schotz et al. The motivation behind such a modification would have been that such a form of signal amplitude control would have placed the throughput audio signals within the linear operating ranges of the audio channels in the transmitter and receiver.

Additionally, the combination shown above fails to explicitly disclose that the code generator creates a unique hop pattern for each individual user. As shown above, the Schotz reference in the combination discloses a code generator (106,308).

While it is not taught to use a unique hop pattern for each individual user, doing so in a FHSS implementation (which is suggested by Schotz; col. 14 lines 5 – 12) is notoriously well known in the art.

Rozin discloses a code generator that creates a unique hop pattern for each individual user (col. 9 lines 52 – 67 and col. 10 lines 1 – 27).

While Rozin is not directed to the digital audio art, since FHSS is used, the data that is coded is irrelevant. It would have been obvious to one of ordinary skill in the art to apply Rozin's teachings to the combination disclosed above. One would have been

motivated to do so to avoid interference, collisions, and interceptions (col. 10 lines 13 – 17 of Rozin) between the various devices in the household disclosed by Schotz.

Regarding **Claim 4**, please refer above to the functions-corresponding to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the method steps of Claim 4. In addition, the claimed power level and distance of approximately 10 ft is at least considered suggested by Schott et al's reference to a range within 10 ft (col. 5, lines 26-36).

Regarding **Claim 6**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1, particularly the first portion of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 6.

Regarding **Claim 7**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1, particularly the first portion of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 7.

Regarding **Claim 10**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 9.

However, the combination in claim 1 does not disclose that the channel encoder is configured to send encoded symbols that are compatible with a Viterbi decoder or that the deocer is a Viterbi decoder.

The Examiner takes Official notice that soft decision Viterbi decoders are notoriously well known in the art (See wikipedia.com entries for Viterbi decoder and Viterbi Algorithm). Applying the Viterbi decoding method disclosed in these entries would read upon the limitations of the channel encoder is configured to send encoded symbols that are compatible with a Viterbi decoder or that the deocer is a Viterbi decoder.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination's decoder to perform as a soft-decision Viterbi decoder. Viterbi decoders or often used in telecommunication lines and for amateur radio and radio relay (see wikipedia Viterbi entries). It would be an advantage to use the Viterbi decoder in the combinations circuitry because Viterbi decoding has an advantage of a fix decoding time making it well suited for hardware decoder implementation (Flemming).

Regarding **Claim 11**, please refer above to the components cited above in the rejection of the similar limitations of Claim 9. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 11.

Regarding **Claim 12**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 12.

In addition, the combination further discloses a 2.4 GHz direct conversion receiver that includes a spread spectrum communication demodulator and a receiver code generator (Schotz elements 40, 106,308, 144,146,148; col. 11, line 13 - col. 12, line 24; col. 15, lines 45-52).

Regarding **Claim 13**, please refer above to the components cited above in the rejection of the similar limitations of Claim 7. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 13.

In addition, the combination further discloses a 2.4 GHz direct conversion receiver that includes a spread spectrum communication demodulator and a receiver code generator (Schotz elements 40, 106,308, 144,146,148; col. 11, line 13 - col. 12, line 24; col. 15, lines 45-52).

Claims 14 – 16, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann (U.S. Patent Application Publication 2004/0223622) in view of Benthin (U.S. Patent 5,790,595)

Regarding **Claim 14**, Lindemann discloses:

A wireless digital audio system (Fig. 15B and Fig 17), comprising:

at least one audio source (Fig. 15B, 133, 134, 135);

at least one digital audio transmitter operatively coupled to said at least one audio source (Fig. 15B 131);

at least one audio receiver adapted for digital wireless communication with said at least one audio transmitter (Fig. 15B, 130 and Fig. 17 300)

each of said at least one digital audio transmitter and receiver being configured for code division multiple access (CDMA) communication (para 0075); and

at least one module adapted to audibly reproduce said processed CDMA signal, said CDMA communication configuration providing a user with independent audio reproduction free of interference from other users or wireless devices (Fig. 15A).

Lindemann does not explicitly disclose that the transmitter is utilizing fuzzy logic to optimize digital signal processing.

Lindemann in view of Benthin discloses

a transmitter (i.e. the transmitter of Lindemann) utilizing fuzzy logic to optimize digital signal processing (Benthin col. 2 lines 6 – 31 and col. 5 lines 10 – 25).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the convolutional encoding scheme as well as the soft decision relevant components of Benethin as part of the encoding and signal reception parts of the system Lindemann. The motivation behind such a modification would have been that convolutional encoding is well known in the art to perform well under high error conditions and is often inexpensive to implement. The soft bit determining circuitry would have improved the reliability of the decision relating to the hard data bit equivalents of the received information, as is taught by Benthin.

Regarding **Claim 15**, in addition to the rejection of claim 14, the combination further discloses:

at least one module adapted to amplify said processed CDMA signal (Fig. 17 element 301).

Regarding **Claim 16**, in addition to the rejection of claim 15, the combination further discloses:

wherein said at least one signal amplifying module includes at least one power amplifier, said at least one power amplifier being configured to provide a low distortion audio signal output (i.e. the amplifier 301 is a low noise amplifier).

Regarding **Claims 39 and 40**, in addition to the elements stated above regarding claims 33 and 34, the combination does not disclose wherein at least one of said digital

audio transmitter and receiver is battery powered. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the speaker reception portion of the combination's battery powered. One would have been motivated to do so to be able to place and use the speakers in an area where standard power supplies are unavailable (i.e. outdoors).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alstatt (U.S. Patent 5,771,441) in view of Lindemann (U.S. Patent Application Publication 2004/0223622) and in further view of Benthin (U.S. Patent 5,790,595).

Regarding **Claims 17 and 18**, Alstatt teaches:

An audible reproducing module including at least one headphone speaker (Fig.1).

Alstatt does not disclose the limitations of claims 14, 15 or 16. The combination of Lindemann in view of Benthin as shown above in the rejections of claim 15 and 16 meet these limitations.

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to modify the wireless audio system of Alstatt to incorporate the digital transmission and reception scheme of Lindemann in view of Benthin for the wireless communication of full range audio data. The motivation behind such a

modification would have been that such a digital transmission would have provided a number of benefits, including the reception of CD-quality sound and forwarding error correction, the latter of which would have enabled the system to account for errors in transmission. The digital-based system of the combination would have also enabled the option of muting the output signal in the presence of sufficient levels of error. The spread spectrum technique of the combination would have also limited interference from another signal to cause error in only one portion of the transmitted signal rather than the entire signal. Further, the transmission components of the combination would have also permitted transmission over unlicensed frequency bands.'

Additionally the combination discloses:

Said at least one headphone speaker (i.e. Fig. 1 of Alstatt) receiving said low distortion audio signal output from said at least one power amplifier (i.e. the headphone of Alstatt receiving the audio which has been amplified by 301 in place of the speaker in 15A of Lindemann).

Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann (U.S. Patent Application Publication 2004/0223622) in view of view of Benthin (U.S. Patent 5,790,595) and in further view of Schotz (U.S. Patent 5,946,343).

Regarding **Claims 35 and 36**, in addition to the elements stated above regarding claims 14 and 15, the combination does not explicitly disclose wherein said at least one audio source provides analog output in the approximate range of 20 Hz to 20 kHz.

Schotz discloses one audio source provides analog output in the approximate range of 20 Hz to 20 kHz (Fig. 1 element 26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination to include the analog sources such as the AM/FM tuner of Schotz. One would have been motivated to do so to allow users of the combination to enjoy a commonly available and widespread audio format such as AM/FM.

Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann (U.S. Patent Application Publication 2004/0223622) in view of Schotz (U.S. Patent 5,946,343).

Regarding **Claims 37 and 38**, in addition to the elements stated above regarding claims 16 and 17, Lindemann does not explicitly disclose wherein said at least one audio source provides analog output in the approximate range of 20 Hz to 20 kHz.

Schotz discloses one audio source provides analog output in the approximate range of 20 Hz to 20 kHz (Fig. 1 element 26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lindemann to include the analog sources such as the AM/FM tuner of Schotz. One would have been motivated to do so to allow users of Lindemann to enjoy a commonly available and widespread audio format such as AM/FM.

Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann (U.S. Patent Application Publication 2004/0223622).

Regarding **Claims 41 and 42**, in addition to the elements stated above regarding claims 33 and 34, Lindemann does not disclose wherein at least one of said digital audio transmitter and receiver is battery powered. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the speaker reception portion of Lindemann battery powered. One would have been motivated to do so to be able to place and use the speakers in an area where standard power supplies are unavailable (i.e. outdoors).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7546. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

acf

SINH TRAN
SUPERVISORY PATENT EXAMINER